

**Notice of Allowability**

Application No.

10/518,014

Examiner

Henry S. Hu

Applicant(s)

ARASE ET AL.

Art Unit

1796

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment of September 19, 2007.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in two telephone interviews with **Abraham J. Rosner (registration # 33,276, tel: 202 293-7060) on November 16 and 20, 2007** to amend Claim 1 as following:

#### Claim

**Claim 1** at the end after the phrase of "carried out", please add the sentence of "with the condition that the concentration ratio between the fluorine-containing ethylenic monomer and the fluorovinyl ether derivative in the reaction system is maintained at a constant or almost constant level so that a fluoropolymer is produced with minimized composition distribution and molecular weight distribution"

### DETAILED ACTION

2. This office action is in response to Amendment and Declaration (under Rule 132) both filed on September 19, 2007. **Claims 1 and 5 were amended, while no claim was amended or added.** To be more specific, parent **Claim 1** was only amended to correct a typographical error, while dependent **Claim 5** was only amended to use a more clarified language such as chemical formula as suggested by Examiner.

The use of Examiner's amendment is to add the subject matter regarding maintaining the concentration ratio as indicated on page 7 at lines 17-25 as well as page 6 at middle section of Remark so as to be totally distinguished from prior art. **Claims 1-10 are pending now** with only one independent claim (Claim 1). An action follows.

3. Claim rejections under Non-Final Office Action filed on March 21, 2007 are now removed for the reasons given in paragraphs 4-11 thereafter.

*Allowable Subject Matter*

4. Claims 1-10 are allowed.

5. The following is an examiner's statement of reasons for allowance: The above Claims 1-10 are allowed over the closest references:

6. The limitation of parent **Claim 1** in present invention relates to a method for producing a fluorocopolymer which comprises a polymerization reaction of: (A) a fluorine-containing ethylenic monomer with (B) at least one fluorovinyl ether derivative represented by  $CF_2=CF-O-[CF_2CF(CF_3)O]_n-(CF_2)_m-A$  (I)

Said fluorine-containing ethylenic monomer (A) being:

(a1) a perhaloethylenic monomer represented by  $CF_2=CF-R_f^I$  (II) and/or (a2) a hydrogen-containing fluoroethylenic monomer represented by  $CHX^I=CFX^2$  (III)

All the factors in monomers are specified. Said polymerization reaction being carried out in a saturated perfluorohydro-carbon solvent while additional feeding of said fluorine-containing ethylenic monomer and said fluorovinyl ether derivative being carried out "with the condition that the concentration ratio between the fluorine-containing ethylenic monomer and the fluorovinyl ether derivative in the reaction system is maintained at a constant or almost constant level so that a fluoropolymer is produced with minimized composition distribution and molecular weight distribution".

See other limitations of dependent **Claims 2-10**.

7. In view of the Applicants' amendment, Examiner's amendment, Applicants' Declaration (under rule 132) and Applicants' argument on pages 5-7 of Remarks, all 102 and 102/103 rejections relying on four references including **Connolly, Grot, GB 1,034,197 and Atsushi** cannot stand in combination or alone as following:

8. As exactly pointed out by Applicants, each of **Connolly, Grot, GB 1,034,197 and Atsushi** may disclose some co-polymerization process by using a mixture of two or three claimed monomers, which is in the presence of the claimed saturated perfluoroalkane as a polymerization medium. Additional feeding of some monomer(s) may be used by reference(s) or as routinely applied in the art, **each reference in combination or alone still does NOT disclose or suggest maintaining the concentration ratio** between the fluorine-containing ethylenic monomer and the fluorovinyl ether derivative in the reaction system **to be at a constant or almost constant level** so that a fluoropolymer is produced with minimized composition distribution and molecular weight distribution.

9. Applicants have indeed showed at least some comparative results (see comparative Examples A and B) to overcome 103 rejections for non-obviousness in this regard (see page 7 at bottom section of Remarks). Based on the fact that instant application's co-polymerization process is different or at least somewhat different from the process from prior art, the issue of "inherent property" cannot exist. Therefore, all the above-mentioned four references, in combination or alone, does not teach or fairly suggest the process limitations of present invention.

10. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

**JP 6-234,816 to Masayuki et al.** only discloses the preparation of sulfonyl-containing copolymers comprising the claimed two or three monomers (abstract, line 1-4). **Hydrochloro-fluorocarbon** such as 1,1-dichloro-2,2,3,3,3-pentafluoropropane is used as medium for solution polymerization. Hydrochlorofluorocarbon certainly contains at least some hydrogen atoms so that it cannot be related to a saturated **perfluoro**hydrocarbon. Additionally, Masayuki does not disclose or suggest using additional feeding monomer(s) to maintain the claiming concentration ratio at constant or almost constant ratio. Therefore, Masayuki fails to teach or fairly suggest the process limitation of present invention.

11. The two key issues in co-polymerization to prepare functionalized fluorinated copolymers as specified in the saturated perfluoroalkane as a polymerization medium with: (A) maintaining the concentration ratio between the fluorine-containing ethylenic monomer and the fluorovinyl ether derivative in the reaction system to be at a constant or almost constant level and (B) a fluoropolymer is produced with minimized composition distribution and molecular weight distribution, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

12. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of ordinary skill in the art. Therefore, the independent and parent process **Claim 1** is allowed for the reason

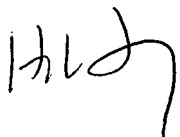
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listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 2-10** are passed to issue.

13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM – 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (571) 272-1119. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/  
Peter D. Mulcahy  
Primary Examiner  
Art Unit 1796



Henry S. Hu

Patent Examiner, Art Unit 1796, USPTO

November 25, 2007